IFW

June 12, 2009

Mr. Evan Langdon
Art Unit: 3654
USPTO

Application No.-
10/812,107

Thank you for your Detailed Action dated April 13, 2009. In an effort to respond, I have included here the modified claims (on separate sheets of paper) and some support information in a general manner regarding the development of my art as well as a response to your observations regarding Panzarella et. al (7,458,760) and Sullivan (3,671,015).

General Background

The proposed art for which I am seeking patent protection centers in the field of industrial application. Specifically, my claims are intended to address the need for a base which can be mounted upon API and ASME flanges which are used on vessels, tanks, and reactors within petrochemical facilities, power plants, and various industrial settings. In such plants, various large vessels (Drawings 1, A) contain openings through which men, tools, and various parts must pass. These openings vary in size from 18" to 48" (Drawings 1, B). These openings basically consist of two parts, a neck (Drawings 1, C) and a flange (Drawings 1, D). Another particular limitation here is that whatever means is used, it must be capable of supporting a life safety load of 9,000 pounds.

The flange is a lip (which varies in width) which follows the circumference of the neck/opening (Drawings 2, E). The lip of the flange contains holes ((Drawings 2, G) which align with the holes in the lid (Drawings 2, F) which generally is attached to the flange. The placement and number of holes in a flange varies from flange to flange.

When access to the tank is required, bolts and nuts are removed from the flange/lid. This presents an opening which is elevated above the surface of the vessel.

In order to provide a means of lifting loads into and out of the vessel, some sort of base/boom must be provided. Currently, tripods are used to provide a high centering point above the openings for ingress and egress. These, however, due to their design, limit access to the opening. Consequently, I have developed a concept which allows for nearly 360 degrees of unrestricted access while establishing a high centering point from which to lift loads.

Fixed means of lifting a load such as those presented by Panzarella and Sullivan could indeed be used, however, in their strictest form, they would require either the welding of their structures to the tank/vessel or holes would need to be drilled into the vessel surface. As noted in earlier correspondence, this could compromise some structures or would at least be time consuming.

The issue before us is first of all the adaptability of Panzarella and Sullivan to such applications (can they be attached to a flange) and, secondly, whether or not a person skilled in the art or familiar with Panzarella/Sullivan could "routinely experiment with the parameters ... so as to ascertain the optimum or workable ranges" for such application.

Panzarella

Panzarella et. al. discloses a hoist and mounting base which is designed to be mounted in or on to a mode of transportation : "pick up truck, van, automobile, or sport utility vehicle" (Column 1, lines 14-17). Disclosed is a base plate (13) comprised of an intermediate member (11), and two legs (14, 16). The intermediate member (11) has knuckle hinge joints (24) which provide for the legs (14, 16) to be connected so as to conform to the plane of the base plate (13). In its raw form, a person might be able to attach Panarella's apparatus to a flange provided that the holes (28) where set to align perfectly with holes in the lip of a particular flange given that one of the holes (22) drilled in the base plate (13) was determined to provide a third anchoring point for securing the apparatus (see Drawings 2, H). A number of limitation can be herein observed:

a. Looking at Drawings 2, H, one can see clearly that the available space in the opening of the flange/vessel is being compromised by not only the base plate (13)/intermediate member (11) but also the legs (14/16).

b. Placement of the drilled holes in the legs (14/16) would have to be specific to the flange. This would prevent universal application to various sized flanges with varying placement of drilled holes in the flange.

Panzarella also discloses that the legs (14,16) are joined to the intermediate member (11) via knuckle hinged joints (24) (Column 4, lines 1-2). Such a design would be quite effective for the distribution of the force which is asserted during the lifting of a personal transportation vehicle (Column 1, line 21), however, a life safety load of 9,000 pounds would place unmanageable force on the knuckle joints (24) (Drawings 2, I) since there is a narrowed distribution of force at that point.

Sullivan

Sullivan discloses a lifting apparatus designed to attach to a roof and lift loads used in construction settings such as "bricks, roofing, and building materials" (Column 1, lines 14-16). Drawings 2, illustrates the specific application of Sullivan's art to use on a flange. While Sullilvan's art does not impinge upon the opening to the degree that Panzarella's art there is still a reduction in available space for the ingress and egress of loads. Sullivan's art also demonstrates the following limitations:

a. The location of mounting points (Drawings 2, K) would have to be specific to a particular flange. This has, in fact, been done for this drawing.

b. Sullivan discloses an adjustable base structure (6) which includes rods (52) which can be rotated to accommodate the pitch of a roof (Column 2, lines 67-74). It is assumed that while the rods (52) can be rotated upon a horizontal axis so as to accommodate roof pitch, that the potential exists for the rods (52) to telescope into and out of the base (6). In its present form, (a 4 point anchoring system) the adaptability to various sized flanges would be limited in that the holes on the flanges of varying sizes would have to align with the longitudinal and latitudinal alignment of the base (6) and rods (52). Unless the horizontal application of the base (the bottom of the U-shaped base) where to itself telescope, one would have to adopt a 3 point anchoring system.

c. The inclusion of telescoping rods in the present application (or a telescoping bottom of a -shaped base) would require a hollowing out of the portion of the base into which the rods (52) or a portion of the base if it telescoped longitudinally would necessarily lead to the weakening of the base overall thereby preventing it from bearing life safety loads of 9,000 pounds.

Since the placement of holes and the number of holes varies from flange to flange (as noted above), any mounting base relying upon Sullivan's design would have to be manufactured to fit a specific size flange with anchoring points matching the holes in the flange.

Obviousness to a Person Skilled in the Art

As is the case in any Patent Application process, the person applying for the patent must demonstrate that the art which they present was not obvious to persons skilled in the art at hand. The particular problem before me is how does one design an apparatus which can be used to transition the location of a load which can attach to the flange of any vessel, quickly and easily, without compromising the area of the opening in the vessel, cable of bearing life safety load weights of 9,000 pounds, without any modification to the flange of the vessel, or any structural change to the means by which that task is accomplished.

The Sullivan art isn't adaptable attaching to any and all flanges. While it might be set up on the top of a tank vessel, in order to secure stability, it would have to attach to the vessel itself. Again, this would require tapping the vessel or welding the device to the vessel. Tapping the vessel or welding onto the vessel at the very least threatens the integrity of the vessel and certainly in the case of welding, limits use to a particular vessel – it is no longer portable. Any attempt to adapt Sullivan's art to mounting onto a flange leads to a complete revamp of the base and the resultant telescoping base and rods weakens the apparatus unless one ramps up the dimensions thereby impacting portability.

Panzarella's art seems to come closer to adaptation to attachment to flanges. The limitations on Panzarell's art centers around three concerns: a compromise of the area of the opening of a vessel, adaptability to any and all flanges, and the weakness of the knuckle joints limiting the amount of weight which can be lifted.

If a person were to sit down at a drawing board with Sullivan and Panzarella before them, the means of distributing the force and universal adaptation, in my opinion, are not obvious.

The chief issue of concern in this matter is the broad distribution of force throughout the base and its adjoining surface with the flange in order that life safety loads of 9,000 pounds can be lifted. This is first of all accomplished by having a base which covers nearly 1/3 of the surface of the flange thereby broadly distributing any force brought to bear over a large surface reducing the PSI on any given point (See Fig. 32 on Sheet 8 of 10).

The issue of force also centers a concern on the two extending members (Fig. 20, item 40, Sheet 5 of 10) comparable to Panzarella's legs and Sullivan's rods. Any extending members, or legs, or rods must be designed in such a fashion so as to broadly distribute the weight or force brought to bear. Sullivan's art would require telescoping rods which if truly portable would be small and be a weak manner for bearing weight. Panzarella's legs find their weakness at the knuckle joints where the PSI would lead to the limitation of loads.

In my proposed design, I have provided for the broad distribution of force by having the extending members extend into the base. The large surface area of contact between the internal surface of the base above and below the extending member and the extending member provides for a broad distribution of force which enables life safety loads of 9,000 pounds to be borne. This design reduces the PSI exerted at any given point.

This distribution of the weight which reduces the PSI at any given point is accomplished by the inclusion of cavities 33 (Fig. 20, Sheet 5 of 10). The cavities are designed in such a manner that the extending members can move simultaneously longitudinally and latitudinally so that the hole 41 of the extending members can be aligned with any hole in a flange regardless of the size of the flange, or the placement of and number of holes in the flange. This movement is accomplished through the combined designs of the cavity 33 and the slotted grove 42 (Fig. 20, Sheet 5 of 10).

With the ability of the extending members to move longitudinally and latitudinally the base of the proposed apparatus is attachable to any and all flanges without any compromise to the area of the opening of a flange/vessel.

Let me assure you that I spent many hours not only at the drawing board but also in concerted thought before I had my "flash of genius" which made clear how one could design a base to mount to a flange which would provide for universal attachment without compromising the opening of the flange, allow for broad distribution of weight without any modification to the flange of the vessel, or any structural change to the flange or the vessel to which it is attached while all the time seeking ease and compactability.

While the art which I have submitted contains various elements of Panzarella and Sullivan (as well as elements of countless other art) such as a base, extending members, etc., the uniqueness here which is addressed by neither Panzarella nor Sullivan is the capacity to broadly distribute force when managing life safety loads of 9,000 pounds through the design of the

base/extending members and the capacity of the extending members to move longitudinally and latitudinally in such a manner that the opening of the flange/vessel is in no way impeded.

Notes on Claim 21

I recognize that both Panzarella and Sullivan include some sort of means of mounting a hoist to their respective bases. However, I'm thinking that in the detailing of the particular base in the claims requires some sort of reference to a mounting device, otherwise one simply presents a base with no particular function or how that function is achieved. It is not so much the claiming of a mounting pedestal as it is claiming a mounting pedestal as it relates to Claim 20.

Conclusion

Thank you for the time which you have already invested in this process. I will probably give you a call in a few weeks to make sure that this correspondence was received and posted in proper time. If you have any questions regarding my thoughts, I am more than happy to chat with you. You can reach me at 618-957-6363 almost any time.

Thank You,

Jim Barnett